## REMARKS

Claims 10 and 12-17 remain in the present application. New claims, 18 and 19, have antecedent basis in the specification of the original application. (Paragraphs [0027] and [0009], respectively.) No new matter is introduced as a result of these amendments.

Before considering the rejections in detail, key aspects of the present invention are briefly reviewed. The present invention relates to a method for electrochemically determining the concentration of chemically reversible compunds, specifically quinones and hydroquinones ($CoQ_{10}$ and $CoQ_{10}H_2$) in solution. The invention uses a coulometric guard cell arranged in series with an analytical cell. The analytical cell consists of at least two coulometric electrodes, one electrode operating in the reductive mode, and one electrode operating in the oxidative mode. A liquid chromatographic column may be placed before the guard cell for time-spaced separation of materials. Essential to this invention is the ability to selectively reduce or oxidize chemically reversible species, particularly hydroquinones or quinones, in a sample using an in-line coulometric detector, eliminating the need to add a chemical reducing or oxidizing agent, thereby minimizing both cost and additional clean-up steps.

## Claim Objections

The Examiner has objected to claims 1 and 10 on the basis that the word "and" should be inserted at the end of lines 6 and 5, respectively. Claim 1 has been canceled, and claim 10 has been amended to include the word "and" where requested by the Examiner.

## Rejection Under 35 U.S.C. §112, second paragraph

The Examiner has rejected claims 2-9 and claims 13-17 as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claims 2-9 have been cancelled, and as such, these rejections are moot.

Claim 13 and dependent claims 14-17 were rejected under §112 as having insufficient antecedent basis for the limitation "said aqueous sample solution." Claim 13 has been amended by deleting the phrase "aqueous sample solution" and replacing it with the term "mixture" which has antecedent basis in claim 10. Therefore, the remaining dependent and intervening claims 14, 16 and 17 no longer have this deficiency.

**Rejection Under 35 U.S.C. §102(a)**

The Examiner has rejected Claims 1-17 under 35 U.S.C 102 (a) as anticipated by Tang et al. ("HPLC Analysis of Reduced and Oxidized Coenzyme $Q_{10}$ in Human Plasma," *Clinical Chemistry* 47:2, 258-265 (Feb. 01, 2001), referred to as "Tang I." The Examiner has erroneously interpreted Tang I as evidence that the present invention was known or used "by others" under §102(a).

However, the Tang I reference is not valid prior art under §102(a) because the technology described in Tang I is the invention of the present applicants, and not that of "another." It should be noted that "authorship" is distinctly different from "inventorship." The additional authors listed on the Tang I reference (A. DeGrauw, A. Hershey and A. Pesce) are not inventors of the present invention as defined by patent law. Therefore, the present invention was not invented "by others" and the Tang I publication is not a valid reference under 102(a).

The attached declaration supporting the above conclusions is submitted under 37 CFR 1.132. The declaration states that the invention disclosed in the publication

is the work of the present inventors only, and was not invented "by others." Thus, the rejection under §102(a) has been overcome, and should be withdrawn.

**Rejection Under 35 U.S.C. §102(b)**

The Examiner has rejected claims 1-12 as being anticipated by Matson, U.S. Patent No. 4,552,013. Claims 1-9 and 11 have been canceled, and claims 10 and 12 have been amended. However, regardless of these amendments, Matson does not anticipate the present invention because Matson does not disclose all of the claimed elements of the present invention.

The present invention, as defined by the currently pending claims, relates to a method by which a solution containing chemically reversible compounds (particularly hydroquinones and quinones) can be quantified with a high degree of reliability and specificity without the use of reducing or oxidizing agents agents. The Examiner has rejected independent claim 10 as being anticipated by Matson. Though claim 10 is now amended to include a coulometric guard cell with a voltage of about +700 mV (antecedent basis at paragraph [0035]), the claimed invention (both as amended and as previously claimed) is not taught by Matson.

The Matson patent does not teach the present invention because it lacks the disclosure of several elements. First, the Matson patent does not teach the analysis of *electrochemically reversible* compounds, an essential element of the present invention as claimed in claim 10. Matson also does not teach the coulometric detection of the particular electrochemically reversible compounds quinones and hydroquinones. Because Matson does not specifically teach this element, it cannot anticipate the present invention under §102(b).

In addition, Matson does not teach using a voltage of about +700 mV in the guard cell, as claimed in amended independent claim 10. Thus, Matson also does not anticipate the claimed invention because this limitation is not met. The Examiner has expressed concern that the claimed voltages are "just a matter of optimizing the apparatus." However, the voltages claimed are not an optimization, but rather, are a required operating parameter for the claimed method.

Finally, the Matson reference does not disclose a method of "simultaneously analyzing a mixture of electrochemically reversible materials" as taught by the present invention and claim 10 of the present application. Thus, for this reason also, Matson cannot anticipate the present invention under 102(b).

In summary, because Matson does not disclose analyzing "chemically reversible" compounds, particularly quinones and hydroquinones, does not teach the claimed voltages, *and* does not teach simultaneous detection of these compounds, the Matson reference does not anticipate the present invention. The applicant therefore respectfully submits that the §102(b) rejection has been overcome and should be withdrawn.

**Rejection Under 35 U.S.C. §103(a)**

Claims 1-9 were rejected by the Examiner as being unpatentable, under 35 U.S.C. §103(a), based upon Tang et al. (Simple and rapid HPLC method with coulometric detection of coenzyme $Q_{10}$ in human plasma and CSF," *Book of Abstracts*, 219$^{th}$ ACS National Meeting, San Francisco, CA, March 26-30, 2000, referred to as "Tang II") in view of Schieffer.

Claims 1-9 have been cancelled, and the present rejection under §103(a) is no longer at issue. However, the Examiner should note that the Tang II reference cannot

be used as prior art against the present invention because it does not qualify as a proper reference under 35 U.S.C. §102.

Tang II is not a valid reference under 102(*a*) because it does not indicate that the invention was "known or used by others". Like the Tang I reference, the Tang II publication lists the inventors of the present invention and additional authors. The additional authors are not *inventors* of the present invention. The invention disclosed in the Tang II publication is solely the work of the present inventors. The attached declarations are submitted under 37 CFR 1.132 in support of this fact.

Likewise, Tang II is not a valid reference under §102(*b*), since §102(b) requires that "the invention be patented or described in a printed publication . . . more than one year prior to the date of application for patent." 35 U.S.C. §102(b). The Tang II reference was published on March 26, 2000. The provisional application for the invention disclosed in the Tang II reference was filed on March 6, 2001, less than one year from the date of publication of the Tang II reference. Thus, the Tang II patent is not a reference under 102(b), and will therefore not support an obviousness rejection under §103.

Therefore, in view of the arguments and amendments provided, the present application is now in form for allowance and early reconsideration and allowance of the claims, as currently pending, is earnestly solicited.

Respectfully submitted,

Peter Tang, et al.

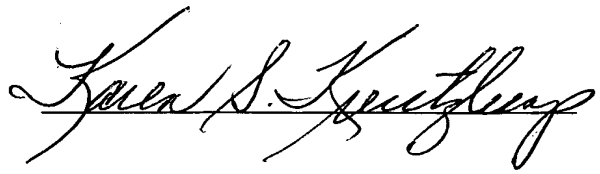
By Karlyn A. Schnapp

Karlyn A. Schnapp
Registration No. 45,558
Attorney for Applicant(s)

FROST BROWN TODD LLC
2200 PNC Center
201 East Fifth Street
Cincinnati, Ohio 45202
(513) 651-6865

**CERTIFICATE OF MAILING**

I hereby certify that this correspondence is being deposited with the United States Postal Service as first class mail in an envelope addressed to Mail Stop Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, this 13th day of July, 2004.



CinLibrary/1408506.1

10872.0477520